

Notice of Allowability

Application No.

10/810,079

Examiner

FARAH FAROUL

Applicant(s)

MORITANI ET AL.

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to December 20, 2007.
2. ☒ The allowed claim(s) is/are 1-10.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☒ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Amir Penn on February 26, 2008.

In the claims:

The listing of the claims will replace all prior version, and listing, of the claims in the application:

Listing of the claims:

1. (currently amended) A mobile communication system comprising:

a multicast router which receives an information signal addressed to a predetermined multicast group transmitted from a transmitter and which makes a copy of the received information signal and distributes it to a network downstream thereof when a mobile terminal belonging to the multicast group is present downstream of the multicast router;

a data link layer switch which receives the information signal distributed from the multicast router and which distributes a copy of the received information signal only to a multicast distribution path in which a mobile terminal belonging to the multicast group is present;

a radio base station which is connected to the data link layer switch and which distributes the information signal distributed by the data link layer switch to a radio network downstream thereof; and

a mobile terminal which receives the information signal distributed by the radio base station,

the mobile terminal comprising:

station switching detection means which detects that the radio base station connected to the mobile terminal itself has been switched;

router switching detection means which detects that the multicast router connected to the mobile terminal itself has been switched;

establishment request transmission means which transmits a path establishing request for requesting at least the data link layer switch to establish a multicast distribution path for distributing the information signal to the radio base station connected to the mobile terminal itself;

withdrawal request transmission means which transmits a withdrawal request for requesting at least the multicast router to withdraw from the multicast group to which the mobile terminal itself belongs; and

transmission control means which transmits a first instruction signal for instructing the establishment request transmission means to transmit the path establishing request and a second instruction signal for instructing the withdrawal request transmission means to transmit the withdrawal request, depending on the detection by the station switching detection means, wherein:

Art Unit: 2616

when the station switching detection means detects the switching of the radio base station but the router switching detection means does not detect the switching of the multicast router, the transmission control means sequentially outputs the first instruction signal, the second instruction signal, and the first instruction signal again; and

when the station switching detection means detects the switching of the radio base station and the router switching detection means detects the switching of the multicast router, the transmission control means outputs the first instruction signal to transmit the path establishing request to a first multicast router which is the multicast router connected to the mobile terminal after the switching of the multicast router and thereafter outputs the second instruction signal to transmit the withdrawal request to a second multicast router which is the multicast router connected to the mobile terminal before the switching of the multicast router.

2. (original) A mobile communication system according to claim 1, wherein the data link layer switch comprises:

path establishing means which establishes a multicast distribution path in a path according to the path establishing request when the path establishing request is received; and

distribution path reconfiguration means which distributes a presence check request to a network downstream thereof when the presence check request is received

and reconfigures the multicast distribution path according to a path establishing request returned in response to the distribution.

3. (currently amended) A mobile terminal belonging to a multicast group and receiving an information signal transmitted on a multicast basis through a multicast router, a data link layer switch, and a radio base station, comprising:

station switching detection means which detects that the radio base station connected to the mobile terminal itself has been switched;

router switching detection means which detects that the multicast router connected to the mobile terminal itself has been switched;

establishment request transmission means which transmits a path establishing request for requesting at least the data link layer switch to establish a multicast distribution path for distributing an information signal to the radio base station connected to the mobile terminal itself;

withdrawal request transmission means which transmits a withdrawal request for requesting at least the multicast router to withdraw from the multicast group connected to the mobile terminal itself, to which the mobile terminal belongs; and

transmission control means which transmits a first instruction signal for instructing the establishment request transmission means to transmit the path establishing request and a second instruction signal for instructing the withdrawal request transmission means to transmit the withdrawal request, in response to the, detection by the station switching detection means, wherein:

when the station switching detection means detects the switching of the radio base station but the router switching detection means does not detect the switching of the multicast router, the transmission control means sequentially outputs the first instruction signal, the second instruction signal, and the first instruction signal again; and

when the station switching detection means detects the switching of the radio base station and the router switching detection means detects the switching of the multicast router, the transmission control means outputs the first instruction signal to transmit the path establishing request to a first multicast router which is the multicast router connected to the mobile terminal after the switching of the multicast router and thereafter outputs the second instruction signal to transmit the withdrawal request to a second multicast router which is the multicast router connected to the mobile terminal before the switching of the multicast router.

4. (currently amended) A mobile communication method for a mobile terminal belonging to a multicast group to receive an information signal transmitted on a multicast basis through a multicast router, a data link layer switch, and a radio base station, the method comprising:

a station switching detection step at which station switching detection means of the mobile terminal detects that the radio base station connected to the mobile terminal itself has been switched;

a router switching detection step at which router switching detection means of the mobile terminal detects that the multicast router connected to the mobile terminal itself has been switched;

a first updating step at which, when the station switching detection means detects the switching of the radio base station but the router switching detection means does not detect the switching of the multicast router, establishment request transmission means of the mobile terminal transmits a path establishing request for requesting the data link layer switch to establish a path for distributing an information signal to the radio base station connected to the mobile terminal itself, at which withdrawal request transmission means of the mobile terminal successively transmits a withdrawal request for requesting the multicast router to withdraw from the multicast group to which the mobile terminal itself belongs, and at which the establishment, request transmission means transmits the path establishing request; and

a second updating step at which, when the station switching detection means detects the switching of the radio base station and the router switching detection means detects the switching of the multicast router, the establishment request means transmits the path establishing request to a first multicast router which is the multicast router connected to the mobile terminal after the switching of the multicast router, and the withdrawal request transmission means transmits the withdrawal request to a second multicast router which is the multicast router connected to the mobile terminal before the switching of the multicast router.

5. (currently amended) A mobile communication system comprising:

a multicast router which receives an information signal addressed to a predetermined multicast group transmitted from a transmitter and which makes a copy of the received information signal and distributes it to a network downstream thereof when a mobile terminal belonging to the multicast group is present downstream of the multicast router;

a data link layer switch which receives the information signal distributed by the multicast router and which distributes a copy of the received information signal only to a multicast distribution path in which a mobile terminal belonging to the multicast group is present;

a radio base station which is connected to the data link layer switch and which distributes the information signal distributed by the data link layer switch to a radio network downstream thereof; and

a mobile terminal which receives the information signal distributed by the radio base station,

the mobile terminal comprising:

station switching detection means which detects that the radio base station connected to the mobile terminal itself has been switched;

router switching detection means which detects that the multicast router connected to the mobile terminal itself has been switched;

establishment request transmission means which transmits a path establishing request for requesting at least the data link layer switch to establish a multicast

distribution path for distributing the information signal to the radio base station connected to the mobile terminal itself;

withdrawal request transmission means which transmits a withdrawal request for requesting at least the multicast router to withdraw from the multicast group to which the mobile terminal itself belongs; and

transmission control means which transmits a first instruction signal for instructing the establishment request transmission means to transmit the path establishing request and a second instruction signal for instructing the withdrawal request transmission means to transmit the withdrawal request, in response to the detection by the station switching detection means and the router switching detection means, wherein:

when the station switching detection means detects the switching of the radio base station but the router switching detection means does not detect the switching of the multicast router, the transmission control means sequentially outputs the first instruction signal, the second instruction signal, and the first instruction signal again; and

when the station switching detection means detects the switching of the radio base station and the router switching detection means detects the switching of the multicast router, the transmission control means outputs the first instruction signal to transmit the path establishing request to a first multicast router which is the multicast router connected to the mobile terminal after the switching of the multicast router and thereafter sequentially outputs the second instruction signal and the first instruction

Art Unit: 2616

signal to transmit the withdrawal request and the path establishing request to a second multicast router which is the multicast router connected to the mobile terminal before the switching of the multicast router.

6. (previously presented) A mobile communication system according to claim 5, wherein the mobile terminal further comprises:

connection strength determination means which determines whether the strength of connection with the radio base station connected to the mobile terminal itself is equal to or higher than a predetermined threshold;

router detection means which detects the presence of the multicast router connected to another radio base station adjacent to the radio base station; and

recording means which records information identifying the multicast router which has established a multicast distribution path depending on the establishment request

transmission means, wherein:

in cases where the connection strength determination means determines that the strength of connection with the radio base station being connected is lower than the predetermined threshold when the router detection means detects the presence of a multicast router which is not recorded in the recording means, the transmission control means outputs the first instruction signal to the multicast router which has been detected, and records information identifying the multicast router which has been detected in the recording means; and

in cases where the connection strength determination means determines that the strength of connection with the radio base station being connected has become equal to or higher than the predetermined threshold again after recording the information identifying the multicast router which has been detected, the transmission control means outputs the second instruction signals to all multicast routers excluding the connected multicast router and deletes information identifying the multicast router to which the second instruction signal has been output from the recording means.

7. (currently amended) A mobile terminal belonging to a multicast group and receiving an information signal transmitted on a multicast basis through a multicast router, a data link layer switch, and a radio base station, comprising:

station switching detection means which detects that the radio base station connected to the mobile terminal itself has been switched;

router switching detection means which detects that the multicast router connected to the mobile terminal itself has been switched;

establishment request transmission means which transmits a path establishing request for requesting at least the data link layer switch to establish a multicast distribution path for distributing an information signal to the radio base station connected to the mobile terminal itself;

withdrawal request transmission means which transmits a withdrawal request for requesting at least the multicast router to withdraw from the multicast group connected to the mobile station itself, to which the mobile terminal belongs; and

transmission control means which transmits a first instruction signal for instructing the establishment request transmission means to transmit the path establishing request and a second instruction signal for instructing the withdrawal request transmission means to transmit the withdrawal request, in response to the detection by the station switching detection means and the router switching detection means, wherein:

when the station switching detection means detects the switching of the radio base station but the router switching detection means does not detect the switching of the multicast router, the transmission control means sequentially outputs the first instruction signal, the second instruction signal, and the first instruction signal again; and when the station switching detection means detects the switching of the radio base station and the router switching detection means detects the switching of the multicast router, the transmission control means outputs the first instruction signal to transmit the path establishing request to a first multicast router which is the multicast router connected to the mobile terminal after the switching of the multicast router and thereafter sequentially outputs the second instruction signal and the first instruction signal to transmit the withdrawal request and the path establishing request to a second multicast router which is the multicast router connected to the mobile terminal before the switching of the multicast router.

8. (previously presented) A mobile terminal according to claim 7, further comprising:

connection strength determination means which determines whether the strength of connection with the radio base station connected to the mobile terminal itself is equal to or higher than a predetermined threshold;

router detection means which detects the presence of the multicast router connected to another radio base station adjacent to the radio base station; and

recording means which records information identifying the multicast router which has established a multicast distribution path with the establishment request

transmission means, wherein:

in cases where the connection strength determination means determines that the strength of connection with the radio base station being connected is lower than the predetermined threshold when the router detection means detects the presence of a multicast router which is not recorded in the recording means, the transmission control means outputs the first instruction signal to the multicast router which has been detected, and records information identifying the multicast router which has been detected in the recording means; and

in cases where the connection strength determination means determines that the strength of connection with the radio base station being connected has become equal to or higher than the predetermined threshold again after recording the information identifying the multicast router which has been detected, the transmission control means outputs the second instruction signals to all multicast routers excluding the connected multicast router and deletes information identifying the multicast router to which the second instruction signal has been output from the recording means.

9. (currently amended) A mobile communication method for a mobile terminal belonging to a multicast group to receive an information signal transmitted on a multicast basis through a multicast router, a data link layer switch, and a radio base station, the method comprising:

a station switching detection step at which station switching detection means of the mobile terminal detects that the radio base station connected to the mobile terminal itself has been switched;

a router switching detection step at which router switching detection means of the mobile terminal detects that the multicast router connected to the mobile terminal itself has been switched;

a ~~third~~ first updating step at which, when the station switching detection means detects the switching of the radio base station but the router switching detection means does not detect the switching of the multicast router, establishment request transmission means of the mobile terminal transmits a path establishing request for requesting the data link layer switch to establish a path for distributing an information signal to the radio base station connected to the mobile terminal itself, at which withdrawal request transmission means of the mobile terminal successively transmits a withdrawal request for requesting the multicast router to withdraw from the multicast group to which the mobile terminal itself belongs, and at which the establishment request transmission means transmits the path establishing request; and

a ~~fourth~~ second updating step at which, when the station switching detection means detects the switching of the radio base station and the router switching detection means detects the switching of the multicast router, the establishment request means transmits the path establishing request to a first multicast router which is the multicast router connected to the mobile terminal after the switching of the multicast router, at which the withdrawal request transmission means successively transmits the withdrawal request to a second multicast router which is the multicast router connected to the mobile terminal before the switching of the multicast router, and at which the establishment request transmission means further transmits the path establishing request to the second multicast router thereafter.

10. (currently amended) A mobile communication method according to claim 9, further comprising:

a connection strength determination step at which connection strength determination means of the mobile terminal determines whether the strength of connection with the radio base station connected to the mobile terminal itself is equal to or higher than a predetermined threshold;

a router detection step at which router detection means of the mobile terminal detects the presence of the multicast routers connected to the radio base station and another radio base station adjacent to the radio base station;

a recording step at which recording means of the mobile terminal records information identifying the multicast router which has established a multicast distribution path with the establishment request transmission means;

a ~~fifth~~ third updating step at which, in cases where the connection strength determination step determines that the strength of connection with the radio base station being connected is lower than the predetermined threshold when the router detection step detects the presence of a multicast router which is not recorded in the recording means, the transmission control means outputs the first instruction signal to the multicast router which has been detected and records information identifying the multicast router which has been detected in the recording means; and

a ~~sixth~~ fourth updating step at which, in cases where the connection strength determination step determines that the strength of connection with the radio base station being connected has become equal to or higher than the predetermined threshold again after recording the information identifying the multicast router which has been detected, the transmission control means outputs the second instruction signals to all multicast routers excluding the connected multicast router and deletes information identifying the multicast router to which the second instruction signal has been output from the recording means.

Conclusion

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kato (US 2007/0171865 A1) is cited to show a system pertinent to applicant's invention.

Art Unit: 2616


3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to FARAH FAROUL whose telephone number is (571)270-1421. The examiner can normally be reached on Monday - Friday 6:30 AM - 4 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Firmin Backer can be reached on 571-272-6703. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Farah Faroul/

Examiner, Art Unit 2616


MELVIN MARCELO
PRIMARY EXAMINER